

REPORT FORMAT

1. WRITTEN REPORT

The written report, **no longer than 10 pages** (without Appendices), **line spacing 1.5, 12-point font**, should consist of the following elements. (NOTE: This section is in 12 point, 1.5 spacing, and is shorter than 10 pages).

1. Always attach the cover sheet of the experiment! It is provided in this Manual.

2. **On the first page print:** Title of the experiment

Your Name (& your partner's name for Experiments #1, #3)

Your TA name

Abstract

The **Title** should be a brief, clear description of the subject of the report.

The **Abstract** is a concise statement of the major results obtained. It should consist of no more than 2 to 4 complete sentences. It is best prepared after the rest of the report has been completed. The “Abstract” will be printed on the same page with the Title. On the same page print your name, your group, TA name and the lab partner.

(3) **Introduction.** The record of an experiment should begin with a **brief** statement of the experiment to be performed, with balanced chemical equations where relevant, and a statement about the goal of the experiment. The second page starts always with the Introduction.

(4) **Procedures and Observations.** Refer to the manual for descriptions of experimental procedures, but be sure to record any variation from the suggested procedure. Clearly labeled sketches of experimental setups are usually preferable to lengthy descriptions. Particularly when describing a synthesis, attempt to use a style similar to that commonly employed in describing synthetic procedures in scientific journals (e.g., “...a solution of 10.0 g of reactant A in 50 mL of anhydrous ether was added dropwise and with stirring over a period of 30 minutes, to ...”). For each reactant, the correct name, formula, source, grade or stated purity, **weight** (or volume and density in case of a pure liquid, or volume and concentration in case of a solution), should be recorded. Standard data (m.p., b.p., etc., of reagents are **not** necessary. In addition, the

volumes of any reaction solvents used should be specified. These data are very important and should be noted in table form.

(5) Summary of results. All data, yields, calculated results, etc. should be presented, preferably in tables or graphs if applicable.

(6) Calculations and Graphs. A sample calculation should always precede results of calculations based on a formula. Notebook entries in this category should be done in the laboratory. Experience should soon convince you those problems with quality, internal consistency, and data validity, which are detected immediately, is more quickly and efficiently rectified. Graphs should always be done separately on good quality paper referenced in your notebook.

(7) Analysis of Data and Errors. **ALL ANALYSIS OF DATA IS TO BE DONE INDIVIDUALLY**. The reproducibility and precision of data should always be examined, and the major sources of errors identified. Detailed statistical analyses of error are rarely called for, but when possible, you should attempt to distinguish between systematic and random error.

(8) Discussion, Interpretation, Conclusion. The outcome of each experiment should be quantitatively and qualitatively discussed in relation to the goals of the experiment as stated in the introduction. You should:

- (a) briefly summarize the key results of each experiment;
- (b) explain the significance of your findings;
- (c) explain any unusual difficulties or problems, which may have led to poor results;
- (d) offer suggestions for how the experimental procedure or design could be improved.

(9) References. Present a numbered list of references to texts, monographs, journal article, standard computer programs.

(10) Appendices. This is the place to put hard copies of computer output (tables, spectra). Each Appendix should have a number and a title and referred to in the body of the report.

2. ORAL REPORT

For the last experiment (at the end of the semester), you will present your results and analysis to your TA in the form of an **ORAL REPORT**. In this report, you should tell your TA briefly:

- what the experiment was all about;
- go through and relevant theoretical background;
- describe briefly what happened in your experiment;
- present your results and analysis;

Much of the preparation for your Oral Report will be the same as for a Written Report, described above. In particular, the data analysis, graphing and plotting, error analysis, etc. should be carried through to completion and the results should be presented in an appropriate form (tables, plots, etc.) for efficient communication.

WHAT TO BRING TO THE ORAL REPORT

Prepare a **one-page** summary of your experimental results, which gives the key results and conclusions. Attach the appropriate "Report Grade Sheet" which can be found in 5.32 Lab manual. Also bring with you your lab notebook, raw data, analysis, results, plots (computer-generated or hand-written), and any other materials that are appropriate. You may bring notes, books, and pretty much anything (inanimate), which will help you in your discussion. You may work with other students; use written reports from earlier years, and in general use any sources you want to prepare for your oral. You are, of course, expected to do your own data analysis and calculations. You may use any sources of help in understanding the analysis as well as other aspects of the experiment.

You should plan on discussing your experiment for about 10-12 minutes. Be aware that it is impossible to present everything that you know about the experiment. Therefore you should plan very selectively what you have choose to present. During the last 8-10 minutes your TA will ask questions pertaining to your experimental work.

The objectives of the oral are to encourage you to learn as much as possible, and to find out how much you know in an efficient manner. In an informal exam of this type there is no substitute for knowing the material.

After analyzing your data and mastering the material, you will want to spend some time organizing your presentation. You will almost surely want to use some notes, especially to guide you through theoretical discussions. You may use a blackboard if you wish. You may also just show your (neatly written) notes to your TA on occasion, rather than transcribe them onto the board. (This is especially convenient if there are many equations.) Do whatever makes you most comfortable, without wasting time. You will surely need to show your TA spectra, plots, etc. As always, attention should be paid to the **presentation** of data and results so that they are easily understood. **Write neatly**, label the axes of plots, indicate units, errors, etc.

You should come prepared to “take the initiative” and guide the oral exam. Otherwise your TA will be forced to take the initiative by asking you question after question, likely venturing into territory you may not prefer to explore. Be prepared to give an informal but well organized presentation. Your presentation should include the following elements, in sequence:

- Introduction;
- Background (why you did it);
- Experimental (what you did);
- Results (what happened);
- Discussion;
- Conclusions;

It’s that simple!

The oral should not be a harrowing experience. Just tell your TA:

- what the experiment is about (briefly);
- what you know about it;
- what you did (briefly);
- what the results were, and why.

Ordinarily, you will not turn in your data, analysis, results, etc. However, you must do so if your TA so requests after your oral exam.

Your grade will reflect your ability to convince the TA that you understand the most important aspects of the experiment. The experiment grade sheet will be used by TA as guideline for grading you.

Sign-up sheets will be posted indicating when orals are scheduled. Check the day, date, time and topic of your oral Report.

Plan to come to the Reference Room (4-449) approximately ten minutes prior to your scheduled Oral Report time. You will be directed to the Section of the Lab where your Report will be heard.

IF THERE IS ANY PROBLEM WITH THE TIMING OF YOUR REPORT, PLEASE MAKE NO CHANGES IN THE SCHEDULE WITHOUT CONSULTING Dr. GHEORGHIU!